

International General Certificate of Secondary Education
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE
PHYSICS **0625/1**
PAPER 1 Multiple Choice
OCTOBER/NOVEMBER SESSION 2001 45 minutes

Additional materials:
Multiple Choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

TIME 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in this paper. Answer **all** questions. For each question, there are four possible answers, **A**, **B**, **C** and **D**. Choose the **one** you consider correct and record your choice in **soft pencil** on the separate answer sheet.

Read very carefully the instructions on the answer sheet.

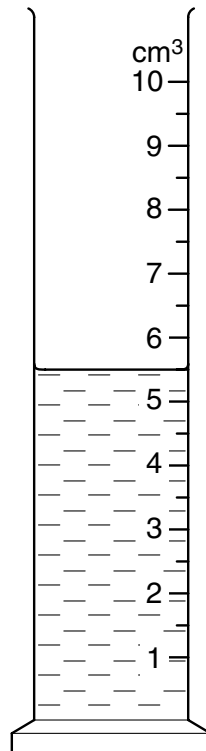
INFORMATION FOR CANDIDATES

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

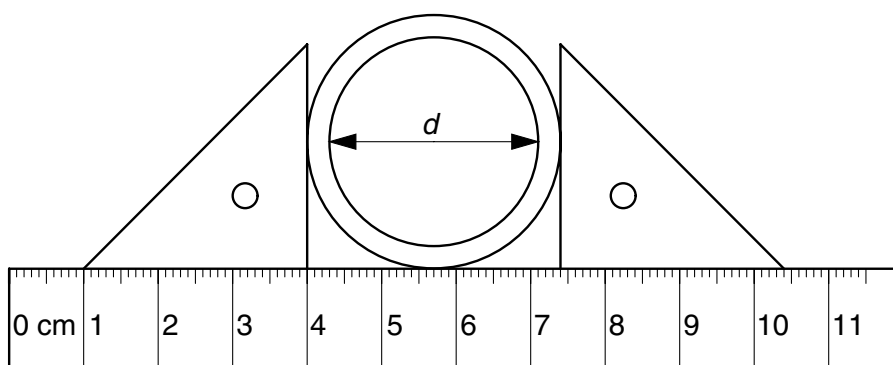
This question paper consists of 21 printed pages and 3 blank pages.

- 1 The diagram shows a measuring cylinder.



What volume of liquid does the cylinder contain?

- A** 5.5 cm³ **B** 5.7 cm³ **C** 6.5 cm³ **D** 6.7 cm³
- 2 The diagram shows a thick-walled tube. The thickness of the wall is 3 mm.

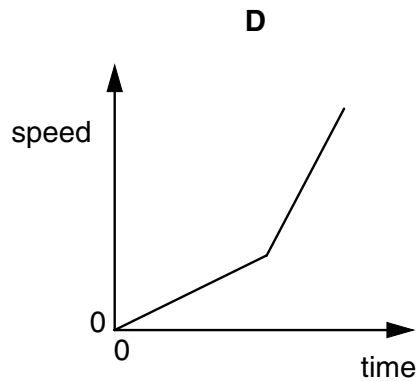
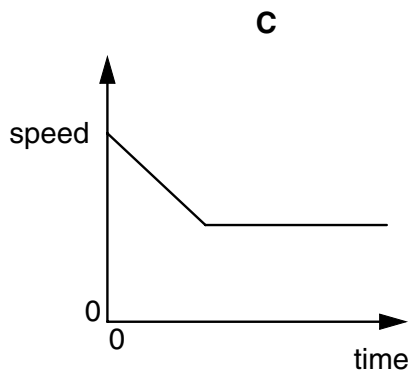
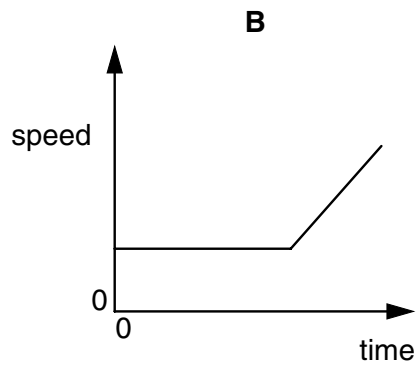
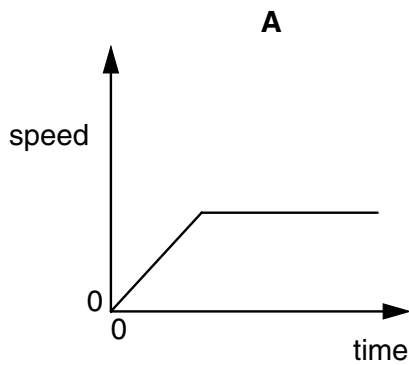


What is the internal diameter d of the tube?

- A** 2.8 cm **B** 3.1 cm **C** 3.4 cm **D** 7.4 cm

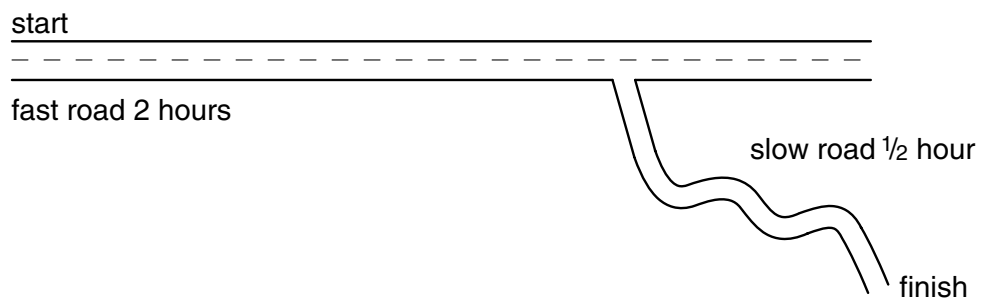
- 3 An object moves initially with constant speed and then with constant acceleration.

Which graph shows this motion?



- 4 A motorist travels 200 km.

After travelling along a fast road for 2 hours, the motorist uses a slow road for the remaining $\frac{1}{2}$ hour of the journey.



What is the average speed of the car?

- A** 80 km/h **B** 100 km/h **C** 400 km/h **D** 500 km/h

5 Which of the following has the same unit as weight?

- A energy
- B force
- C mass
- D power

6 The mass of an astronaut is 70 kg on the Moon.

What is the astronaut's mass on Earth?

- A 7 kg B 70 kg C 80 kg D 700 kg

7 Which of the following is a unit of density?

- A cm^3/g
- B g/cm^2
- C g/cm^3
- D kg/m^2

8 A student carries out an experiment to plot an extension/load graph for a spring. The diagrams show the apparatus at the start of the experiment and with a load added.



What is the extension caused by the load?

- A x B y C $y + x$ D $y - x$

- 9 Diagram **X** shows the directions of the horizontal forces acting on a van when it is moving forward at constant speed.

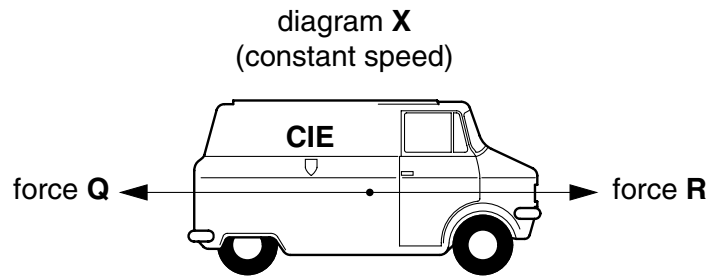
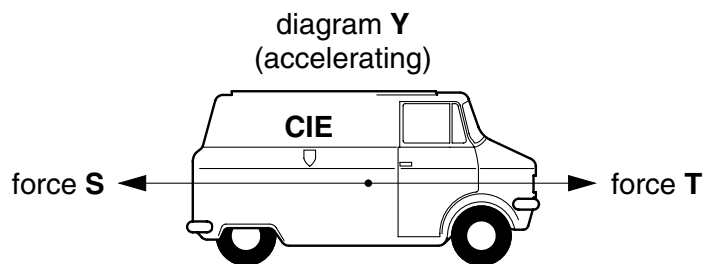


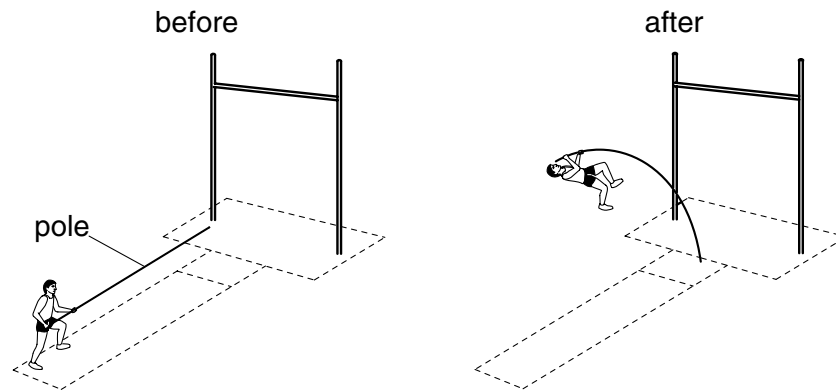
Diagram **Y** shows the directions of the horizontal forces acting on the same van when it is accelerating.



Which of the following describes the sizes of the forces **Q**, **R**, **S** and **T**?

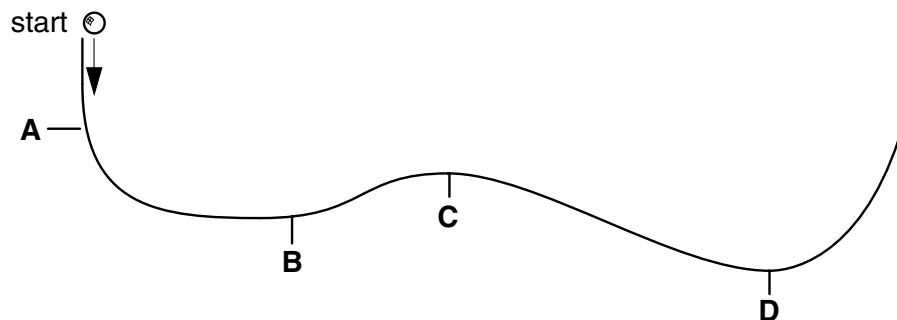
	diagram X (constant speed)	diagram Y (accelerating)
A	Q less than R	S less than T
B	Q less than R	S equal to T
C	Q equal to R	S less than T
D	Q equal to R	S equal to T

- 10** A pole-vaulter runs up to a jump with his pole straight. He puts one end of the pole down on the ground and the pole bends.

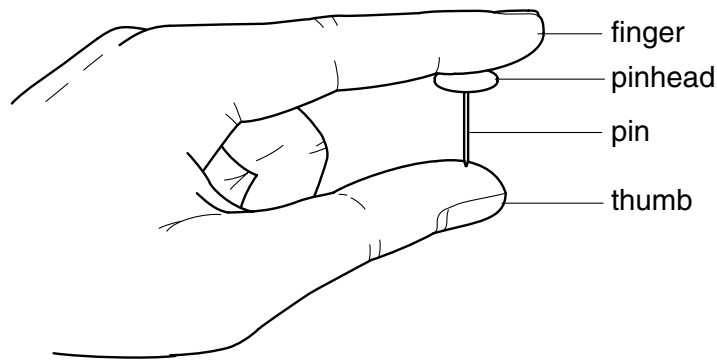


Which form of energy is stored in the pole because it is bent?

- A** chemical
 - B** gravitational
 - C** motion
 - D** strain
- 11** A ball is allowed to roll down a slope, as shown in the diagram. There is no friction.
- At which point does the ball have the greatest energy of motion (kinetic energy)?

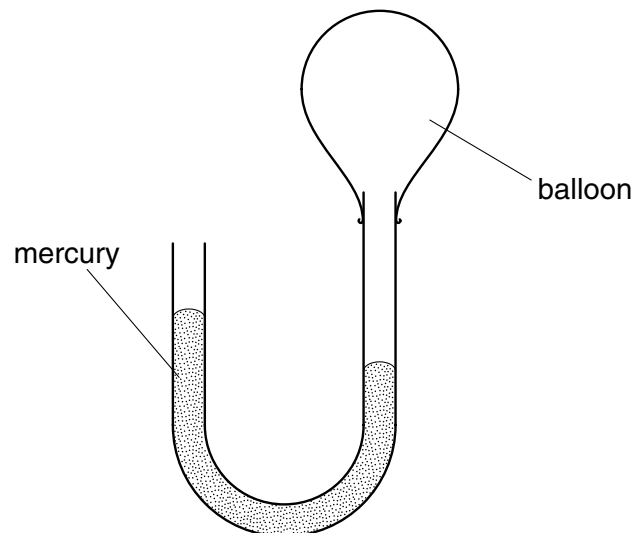


- 12 A pin is squeezed between finger and thumb.



Which statement is correct?

- A The force of the pin is larger on the finger than on the thumb.
 - B The force of the pin is larger on the thumb than on the finger.
 - C The pressure of the pin is larger on the finger than on the thumb.
 - D The pressure of the pin is larger on the thumb than on the finger.
- 13 The diagram shows a manometer attached to an inflated balloon.



What does the difference between the mercury levels show?

- A The air pressure inside the balloon is greater than atmospheric pressure.
- B The air pressure outside the balloon is greater than the pressure inside the balloon.
- C The air pressure in the left and right sides of the tube is equal.
- D The air pressure in the left side of the tube is greater than the pressure on the right side.

- 14 A gas is heated at constant volume.

What happens to its pressure and the speed of its molecules?

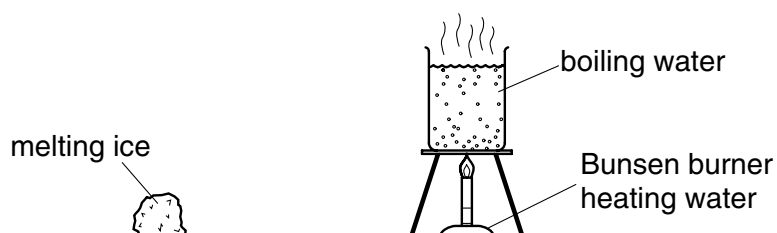
	gas pressure	speed of molecules
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

- 15 The table lists the melting points and the boiling points of four different substances.

Which substance is a gas at 25 °C?

	melting point / °C	boiling point / °C
A	-219	-183
B	-7	58
C	98	890
D	1083	2582

- 16 In an experiment, a piece of melting ice and a beaker of boiling water are in a laboratory which is at 20 °C.



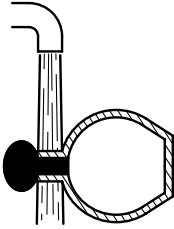
What is happening to the temperature of the melting ice and of the boiling water?

	temperature of the melting ice	temperature of the boiling water
A	constant	constant
B	constant	increasing
C	increasing	constant
D	increasing	increasing

17 The glass stopper in the neck of a glass bottle is too tight to come out.

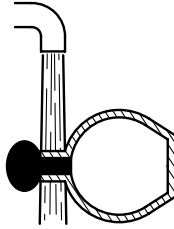
Which diagram shows the best way to loosen the stopper?

A



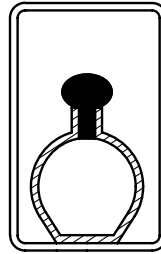
in a stream of cold water for a short time

B



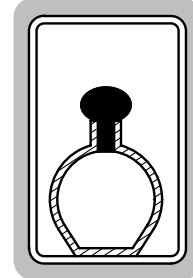
in a stream of hot water for a short time

C



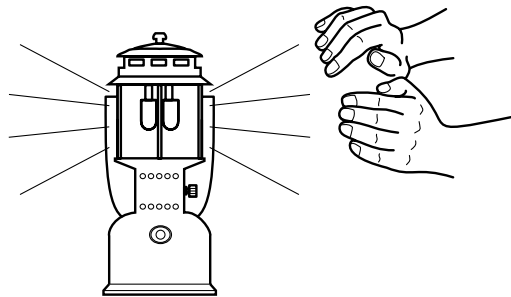
inside a warm oven for a long time

D



inside a refrigerator for a long time

18 A camper warms her hands near a gas lamp.



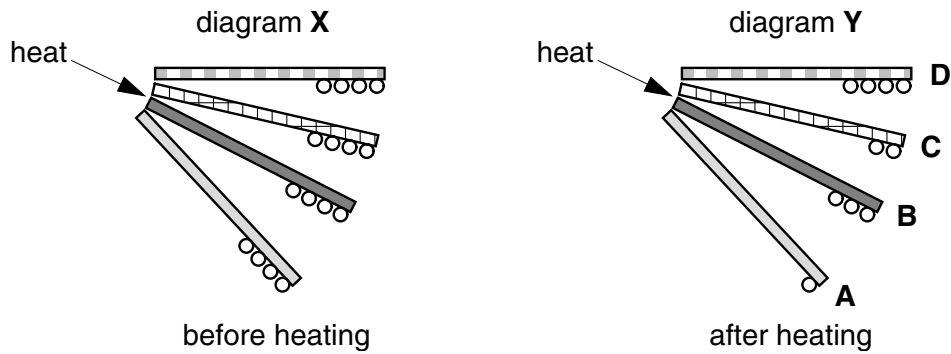
Which waves carry most heat to her hands, and are these waves electromagnetic?

	waves	electromagnetic
A	infra-red	no
B	infra-red	yes
C	light	no
D	light	yes

- 19** An experiment is set up to find out which metal is the best conductor of heat. Metal balls are stuck with wax to rods made of different metals, as shown in diagram **X**.

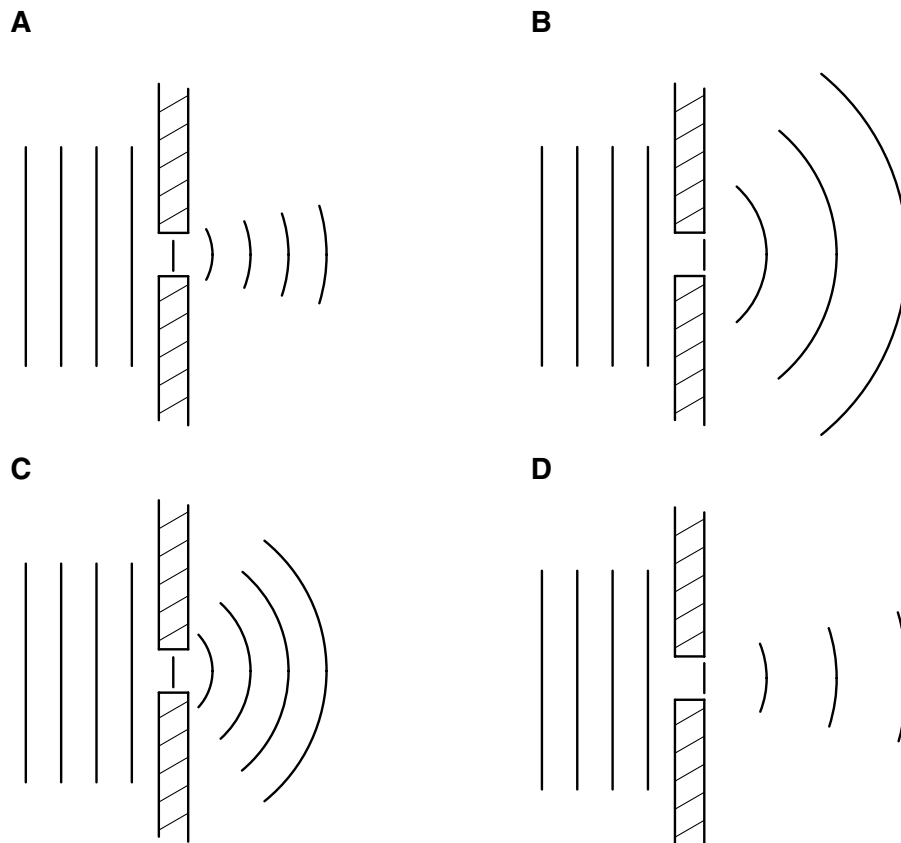
The rods are heated at one end. Some of the balls fall off, leaving some as shown in diagram **Y**.

Which metal is the best conductor of heat?

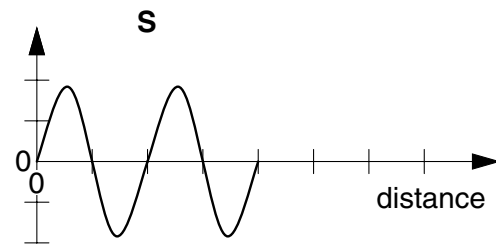
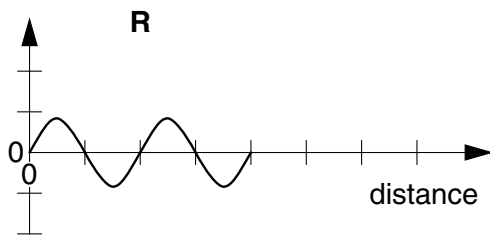
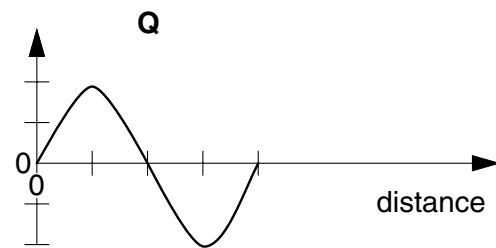
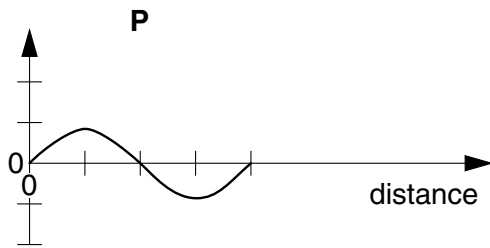


- 20** Plane water waves are approaching a narrow gap in a barrier.

Which diagram shows the diffraction pattern?



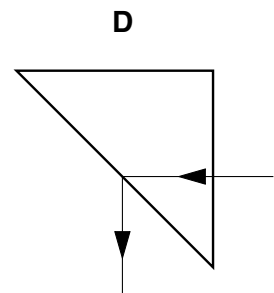
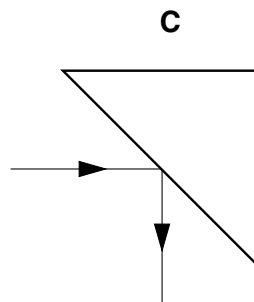
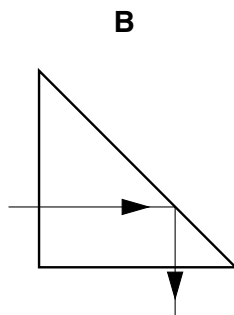
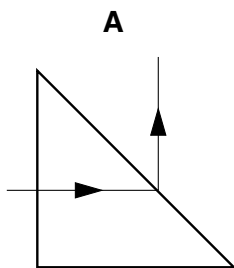
21 The diagram shows four waves drawn to the same scale.



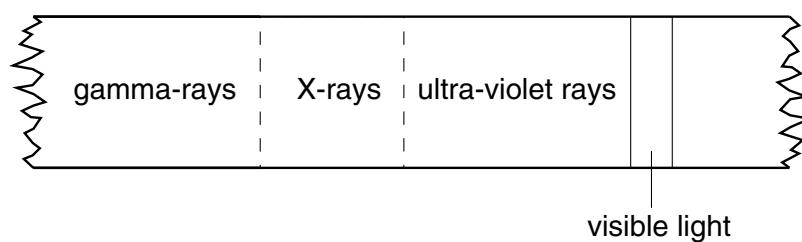
Which statement is correct?

- A** The amplitude of wave **P** is the same as the amplitude of wave **R**.
- B** The amplitude of wave **S** is double the amplitude of wave **Q**.
- C** The wavelength of wave **Q** is double the wavelength of wave **P**.
- D** The wavelength of wave **S** is the same as the wavelength of wave **Q**.

22 Which diagram shows how a ray of light passes through a glass prism in a periscope?



23 The diagram shows a section of the electromagnetic spectrum.



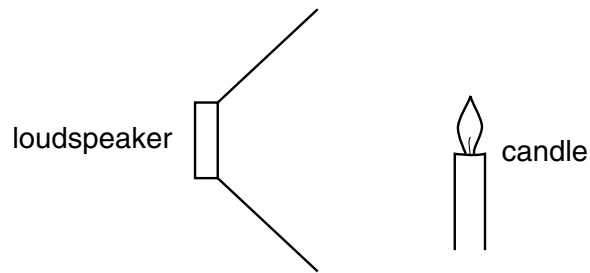
How do the frequency and the speed of gamma rays compare with those of visible light?

	frequency	speed in a vacuum
A	gamma greater	same
B	visible greater	same
C	gamma greater	gamma faster
D	visible greater	visible faster





24 Which change would make a sound louder?

- A** decreasing the amplitude of the wave
- B** increasing the amplitude of the wave
- C** decreasing the wavelength
- D** increasing the wavelength

- 25** A lighted candle is put in front of a loudspeaker which is making a loud, steady note. The flame vibrates because of the sound wave.

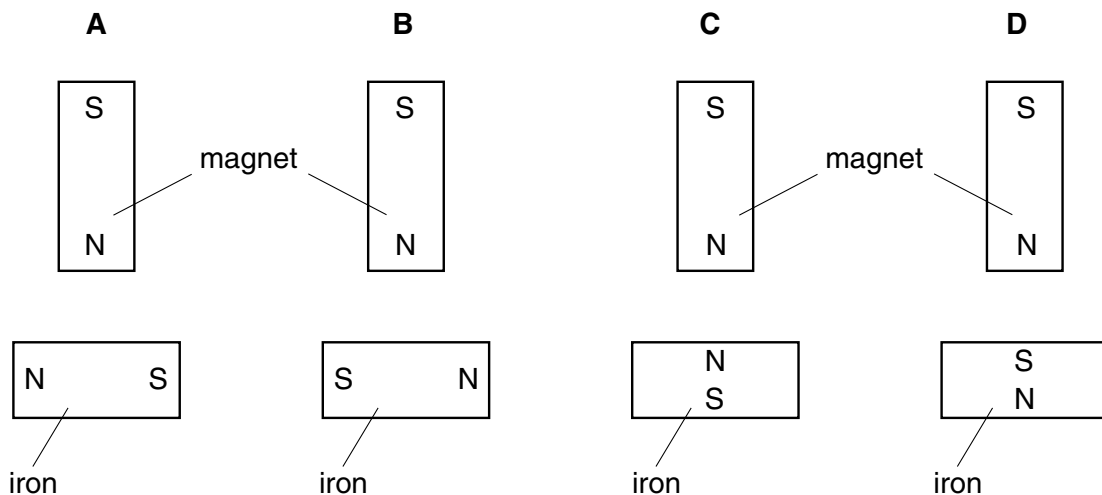


Which type of waves are sound waves and in which direction does the flame vibrate?

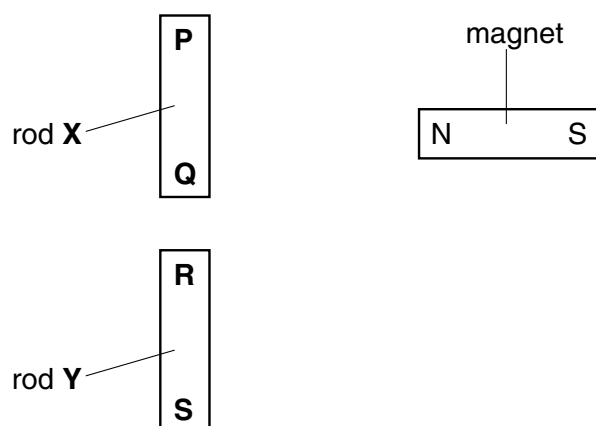
	type of wave	direction of vibration
A	longitudinal	
B	transverse	
C	longitudinal	
D	transverse	

- 26** When a magnet is brought close to an unmagnetised piece of iron, the iron becomes magnetised.

Which diagram correctly shows the magnetic poles induced in the iron?



27 Two rods **X** and **Y** look the same.



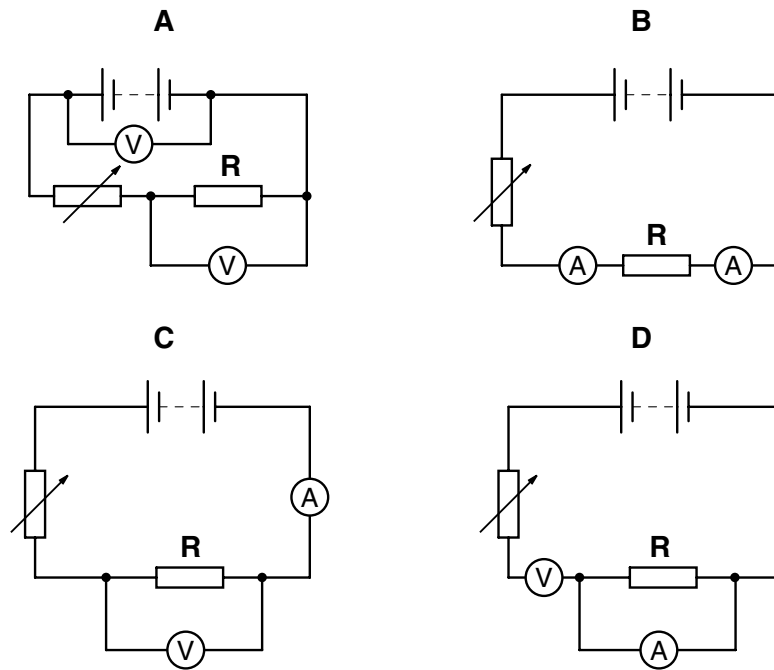
The N pole of a magnet is brought close, in turn, to each end of both rods. The results of these four actions are shown in the table.

end tested	result
P	attraction
Q	attraction
R	attraction
S	repulsion

Which of the rods is a magnet?

- A** neither of the rods
- B** both of the rods
- C** rod **X** only
- D** rod **Y** only

28 Which circuit could be used to find the resistance of resistor **R**?

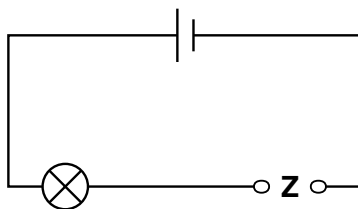


29 A polythene rod repels an inflated balloon hanging from a nylon thread.

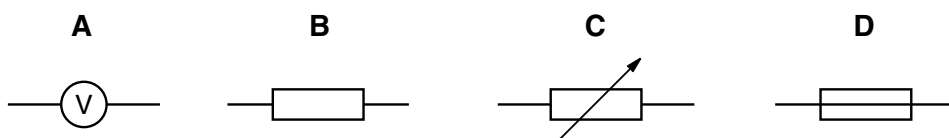
What charges must the rod and the balloon carry?

- A** The rod and the balloon carry opposite charges.
- B** The rod and the balloon carry like charges.
- C** The rod is charged but the balloon is not.
- D** The balloon is charged but the rod is not.

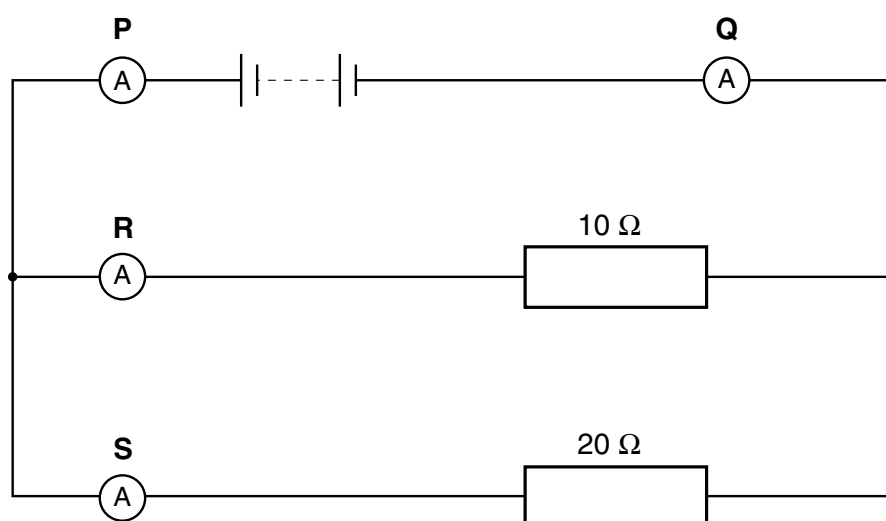
30 An electrical component is to be placed in the circuit at **Z**, to allow the brightness of the lamp to be varied from bright to dim.



What should be connected at **Z**?



- 31 A student uses four ammeters to measure the current in different parts of a circuit.

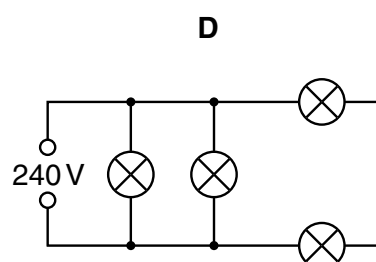
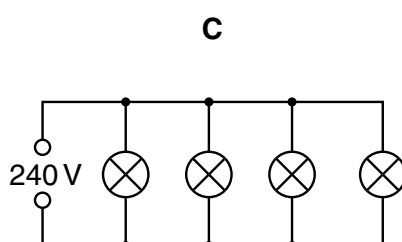
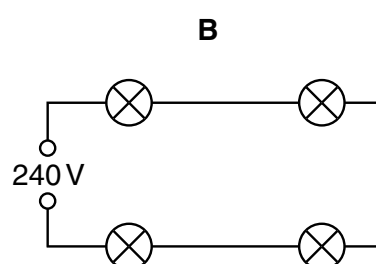
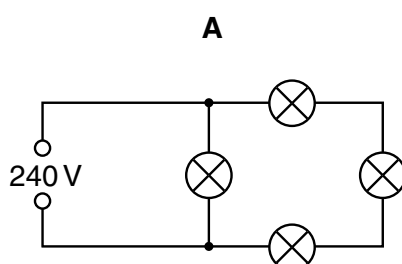


Which two ammeters will each read the largest current?

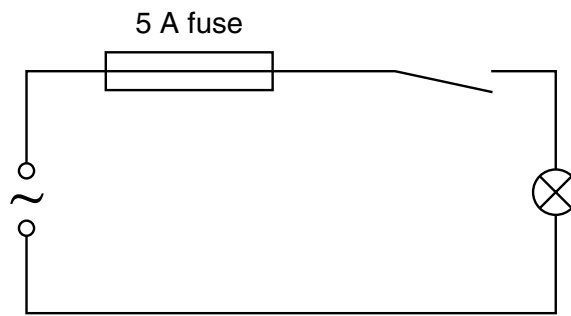
- A P and Q
- B P and R
- C R and Q
- D R and S

- 32 Four lamps are each labelled 240 V, 60 W.

In which circuit would all four lamps have the correct brightness?



33 A student makes the circuit shown.

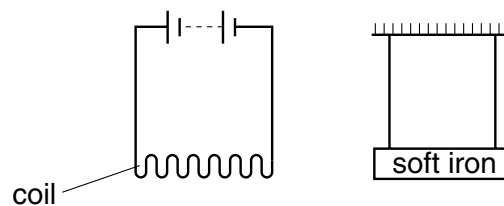


The fuse has blown and stopped the current.

What could have caused this?

- A A 3 A fuse should have been used.
- B The lamp was loose.
- C The current was too large.
- D The voltage was too small.

34 A coil is connected to a battery and a soft-iron bar is hung near to it.

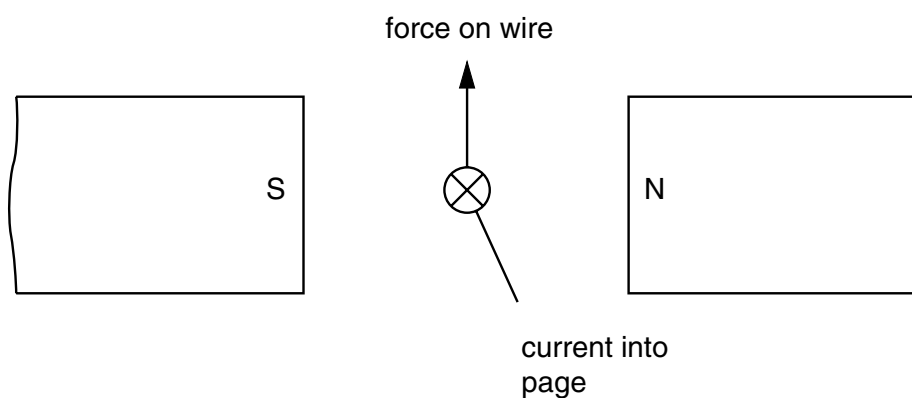


The current is then reversed by reversing the battery connections.

How does the soft iron bar behave in the two cases?

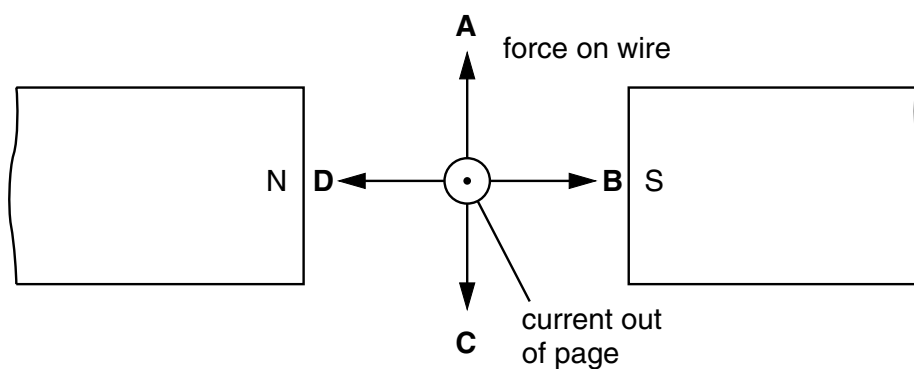
	with the battery as shown	with the battery reversed
A	attracted to the coil	attracted to the coil
B	attracted to the coil	repelled from the coil
C	repelled from the coil	attracted to the coil
D	repelled from the coil	repelled from the coil

- 35 A wire carries an electric current between the poles of a magnet. This causes a force that pushes the wire upwards.

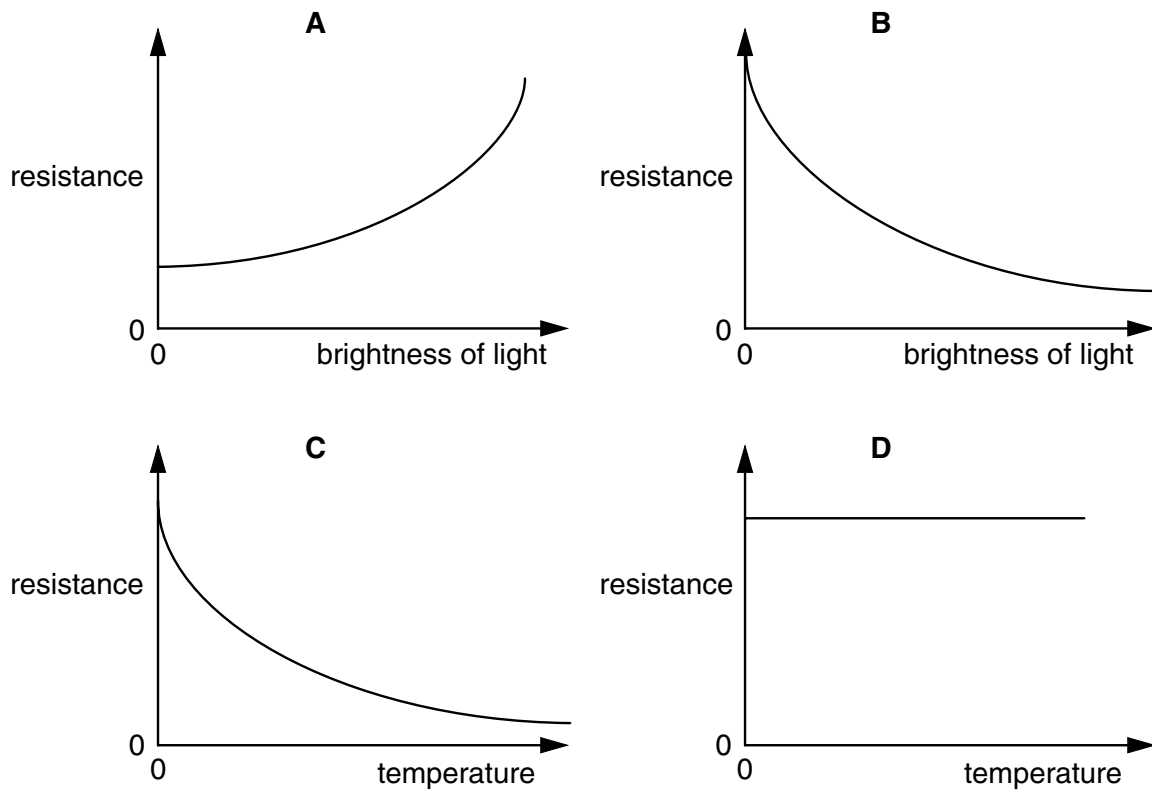


The poles of the magnet and the direction of the current are both reversed.

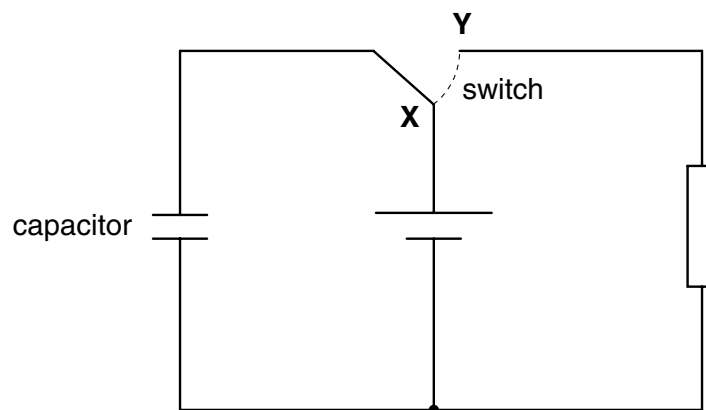
Which arrow now shows the direction of the force on the wire?



36 Which graph shows how a thermistor could behave?



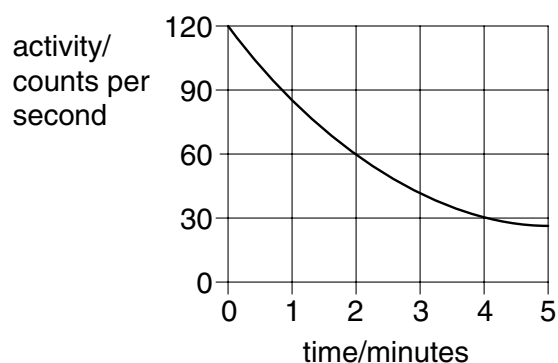
37 The diagram shows a circuit which includes a switch and a capacitor.



What happens to the capacitor when the switch is at **X** and when it is at **Y**?

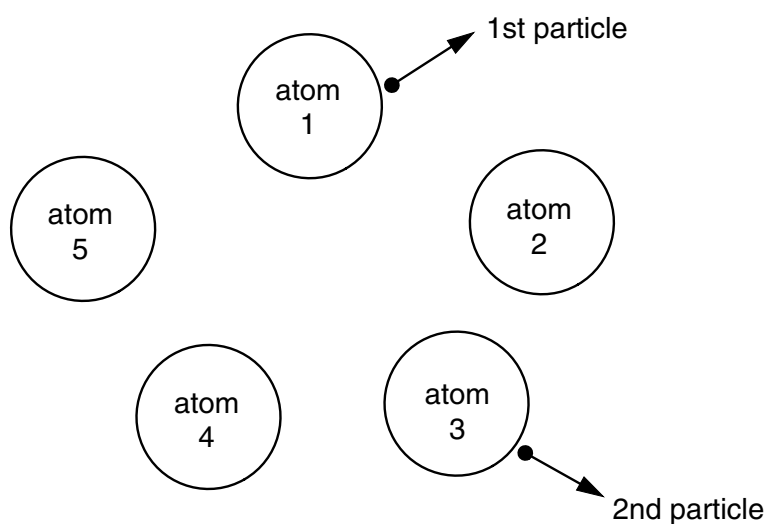
	switch at X	switch at Y
A	charging	charging
B	charging	discharging
C	discharging	charging
D	discharging	discharging

- 38** The graph shows the activity of a radioactive source over a period of time.



What is the half-life of the source?

- A** 1 minute **B** 2 minutes **C** $2\frac{1}{2}$ minutes **D** 4 minutes
- 39** The diagram shows five atoms in a radioactive substance. The atoms give out alpha-particles.

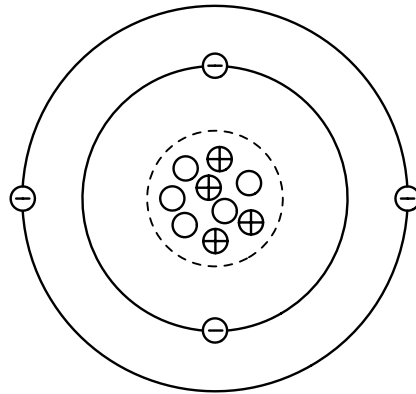


Atom 1 is the first to give out a particle. Atom 3 is the second to give out a particle.

Which atom will give out the next particle?

- A** atom 2
B atom 4
C atom 5
D it is impossible to tell

- 40 The diagram shows the particles in an atom. Charged particles are marked + or –.



What is the nucleon number (mass number) of the atom?

- A** 4 **B** 5 **C** 9 **D** 13

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